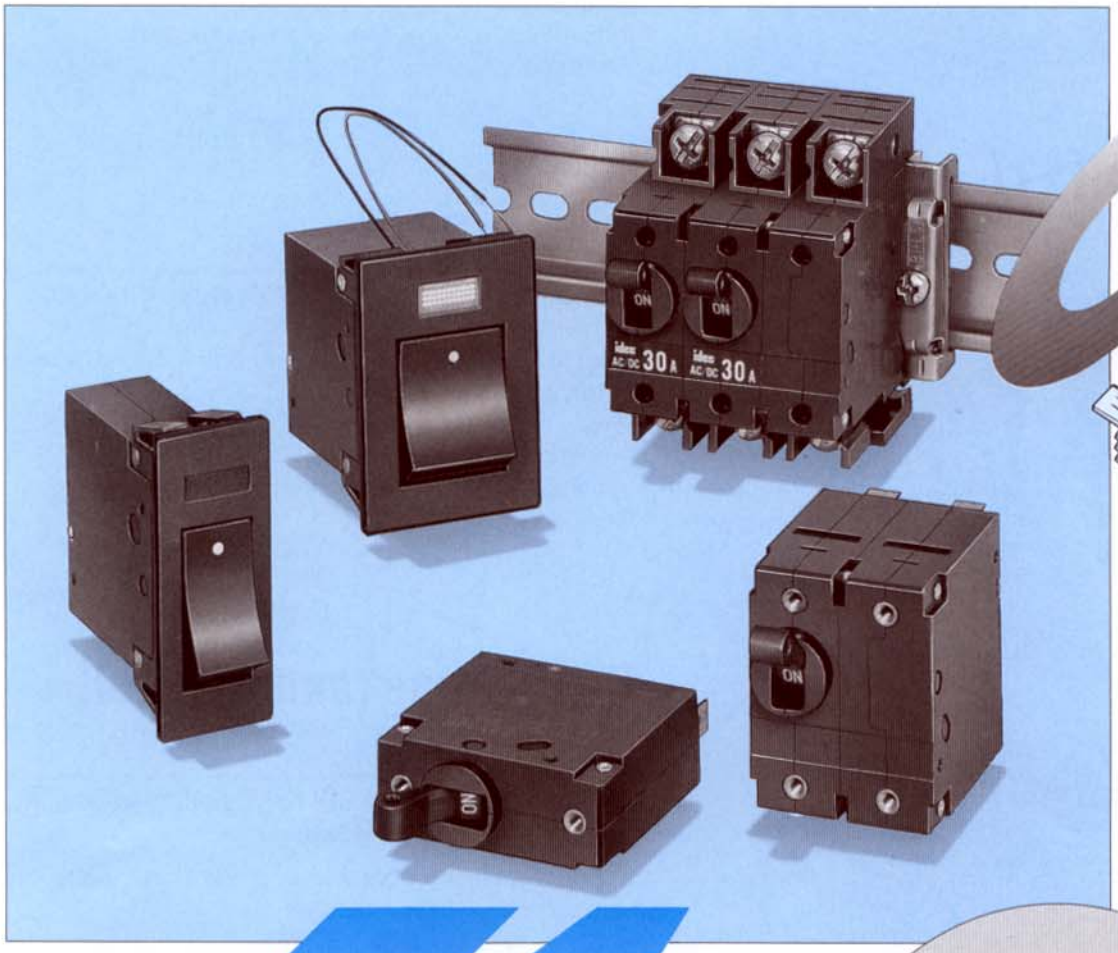
idec

CIRCUIT PROTECTORS

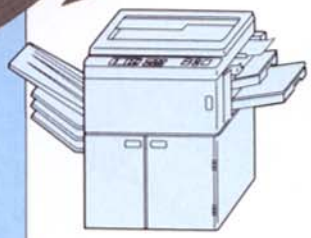
NH1 SERIES

Multi-pole type with one operator.

Rated interrupting capacity: 1,000A (250V AC/65V DC)

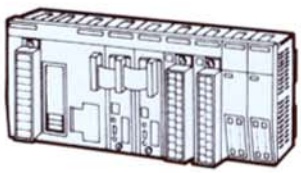


OA



FA

With ground-fault protection

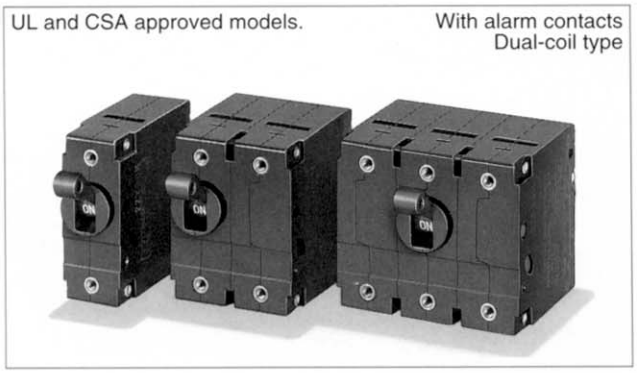


IDEC IZUMI CORPORATION

Wide selection of applications ranging from office and factory automation to industrial applications.

NH1S

UL and CSA approved models. With alarm contacts Dual-coil type



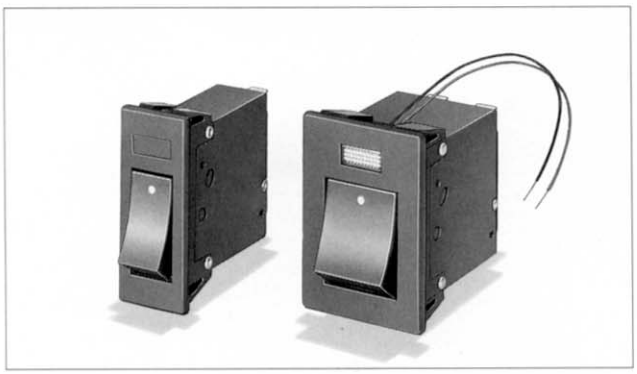
Compact and Lightweight

Compact size saves space.

Over 30% smaller in size than conventional lever style circuit protectors.

[Applications]
Industrial Machines, Measurement Devices, Generators.

NH1Y/NH1L



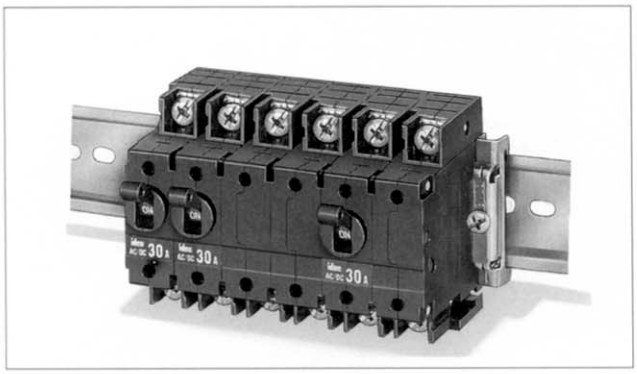
Rocker Style

1- or 2-pole rocker style available with an indicator.

Over 20% smaller in size than conventional rocker style circuit protectors.

[Applications]
Industrial Machines, Measurement Devices, Generators.

NH1V



Direct Panel and DIN Rail Mounting

Only 16mm-wide direct DIN rail mounting without the need for a mounting adapters.

Optional auxiliary contacts and alarm contacts, that can also be DIN rail mounted.

[Applications]
Industrial Machines, Machine Tools, and Control Panels.

NH1G

Ground-fault protection

Circuit protectors (protection against short circuit and overload) with additional ground-fault protection.

Optional auxiliary contacts and inertia delay.

[Applications]
Industrial Machines and Medical Equipment.

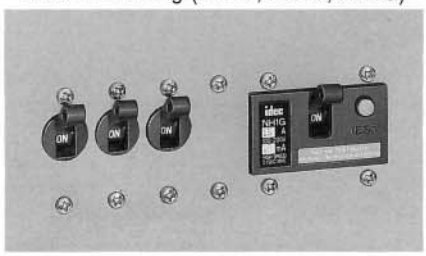
Variety of Operations and Mountings.

Lever Style and Rocker Style.

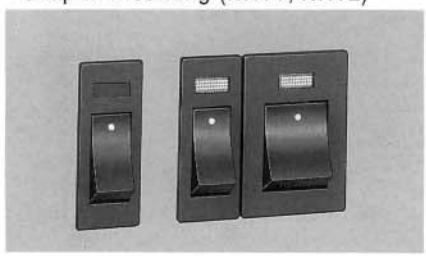
Lever Style Rocker Style

3 Mounting Styles: Screw, Snap-in, and DIN rail mountings.

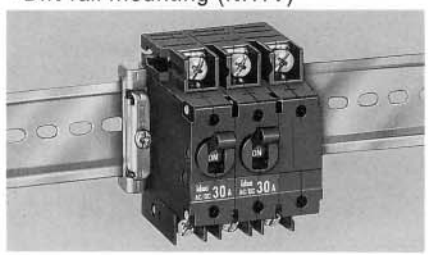
• Screw mounting (NH1S, NH1V, NH1G)



• Snap-in mounting (NH1Y, NH1L)



• DIN rail mounting (NH1V)



Excellent Protection Characteristics and Performance.

Six time delay curves are available to meet your specific applications.

M (Slow) A (Slow) B (Medium) C (Fast) E (Fast) S (Fast)

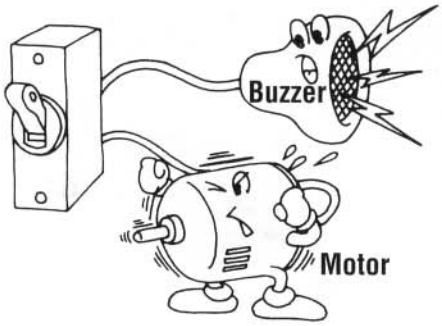
(For dual coil type, curves M, A, and B only are available.For ground-fault protection type, curves A and B only are available.)

Variety of rated currents.

16 rated currents ranging from 0.05 to 30A.

Available with Auxiliary and Alarm Contacts.

Auxiliary contact operations are interlocked with the ON/OFF position of the main terminal. Alarm contacts operate only when protection elements operate.



With Inertia Delays

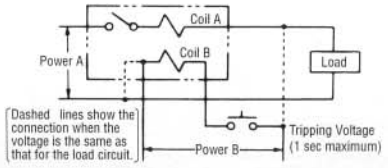
Inertia delays ensure correct protection in a load circuit against inrush currents caused by transformer or lamp loads.

Dual Coil Type (NH1S)

Series Trip (Current Trip) and Relay Trip (Voltage Trip)

[Application Circuit Example]

Coil A (current coil) performs overload and short circuit protections, while coil B (voltage coil) serves to shut down the circuit when the alarm contact detects an abnormal condition.



High Performance

Rated Interrupting capacity:1,000A

1,000A/250V AC • 65V DC

Trip Free Mechanism

The trip free mechanism keeps the circuit open even when the operator is kept at the ON position while there is an accidental short in the load circuit.

Over 10,000 Operations.

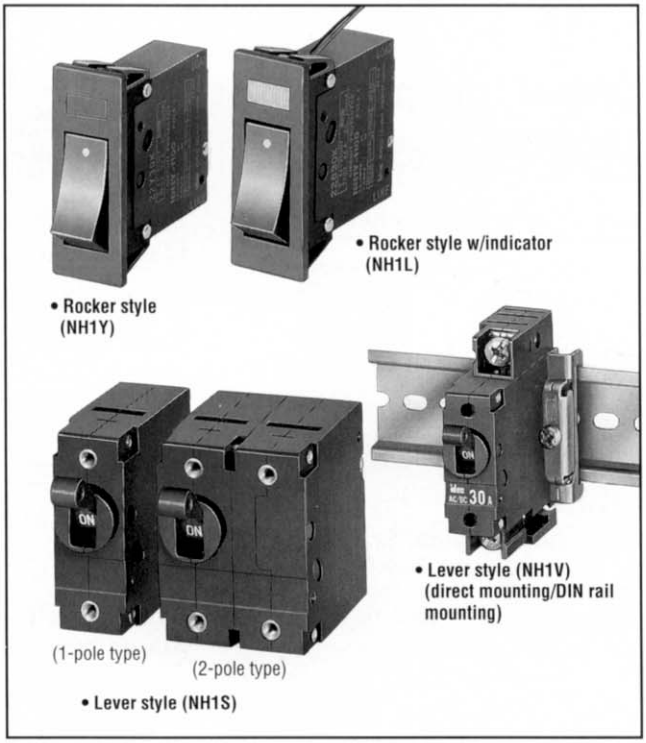
Shockproof Construction Immune to Shocks and Vibrations.

Easy Connection

Main terminals match Tab terminal 250 in dimension.
(NH1V terminal is a screw terminal.)

NH1S • NH1Y • NH1L • NH1V CIRCUIT PROTECTORS

- **Compact, lightweight, high-performance circuit protectors.**
- **Rocker style snaps on the panel surface.**
- **Rated Voltage: 250V AC and 65V DC**
- **Variety of time delay curves and rated currents.**
- **NH1V series circuit protectors can snap on the panel surface directly or a DIN rail.**
- **NH1S series use a dual-coil system.**
- **Available with auxiliary contacts and alarm contacts.**
- **Avaialble with inertia delay.**
- **Hydraulic-magnetic tripping system.**
- **Safe trip-free mechanism.**
- **UL recognized and CSA certified (NH1S type).**



SPECIFICATIONS

Type	NH1S	NH1Y	NH1L	NH1V	NH1S (Dual coil)
Operator	Lever	Rocker	Rocker (w/indicator)	Lever	Lever
Method of Tripping	HM (Hydraulic-magnetic)				
Internal Circuit	Series trip (Current trip), Shunt trip (Current trip), Series trip with alarm contacts (NH1S and NH1V), Series trip with auxiliary contacts, Shunt trip (Voltage trip), Relay trip (Current trip), Relay trip (Voltage trip)				Series trip plus relay trip (Voltage trip)
No. of Poles	1, 2, 3 poles	1, 2 poles	1, 2 poles	1, 2, 3 poles	1, 2 poles
Rated Voltage	250V AC, 50/60Hz, 65V DC				
Rated Current	Current trip: 0.05A, 0.1A, 0.25A, 0.5A, 0.75A, 1A, 2A, 2.5A, 3A, 5A, 7.5A, 10A, 15A, 20A, 25A, 30A (Shunt trip: 10A max., Relay trip: 1A max.) Voltage trip: 30A max.				Current trip: 1A, 2A, 3A, 5A, 7.5A, 10A, 15A
Trip Voltage (Voltage trip)	Rated Voltage: 100, 200V AC, 50/60Hz 6, 12, 24, 48V DC, Maximum impression duration: 1 sec maximum				External trip coil voltage: 6, 12, 24, 32, 50, 100V AC/DC
Rated Interrupting Capacity	250V AC 50/60Hz, 1,000A 65V DC 1,000A (UL/CSA Ratings)				
Auxiliary Contacts Alarm Contacts	SPDT microswitch 250V AC, 3A (resistive load) (UL/CSA Ratings) 125V AC, 0.6A (resistive load) (VDE Rating)			SPDT microswitch 250V AC, 3A (resistive load) (UL/CSA Ratings)	–
Reference Temperature	+25°C				
Operating Temperature	−40 to +85°C (no freezing)				
Insulation Resistance	100MΩ minimum (500V DC megger)				
Dielectric Strength	Between live part and operator, between terminals of different poles, between main terminal and auxiliary contact terminal: 3,750V AC, 1 minute (NH1V: 1,500V AC, 1 minute) Between relay trip terminal and main terminal: 1,500V AC, 1 minute Between terminals when auxiliary contacts are open: 600V AC, 1 minute				Between operator and live part, between terminals of different poles, between voltage trip terminal and main terminal: 1,500V AC, 1 minute
Vibration Resistance	100 m/sec² (10 to 100Hz)				
Shock Resistance	1000 m/sec²				
Life	10,000 operations minimum (6 operations per minute)				
Terminal Style	Main terminal: Tab terminal 250 (can be replaced by M3.5 screw terminal using a screw terminal adapter.) Auxiliary terminal: Tab terminal 187 Auxiliary contact: Tab terminal 110			Main terminal: M4 screw terminal (20A maximum) M5 screw terminal (25, 30A) Auxiliary terminal: M3.5 screw terminal	Main terminal: Tab terminal 250 (can be changed to M3.5 screw terminal using a screw terminal adapter.) Auxiliary terminal: Tab terminal 187
Mounting style	Screw mounting	Snap mounting		Screw mounting, DIN rail mounting	Screw mounting
Weight (Approx.)	1-pole type: 45g, 2-pole type: 90g, 3-pole type: 135g	1-pole type: 50g, 2-pole type: 100g		1-pole type: 65g, 2-pole type: 130g, 3-pole type: 195g	1-pole type: 45g, 2-pole type: 90g

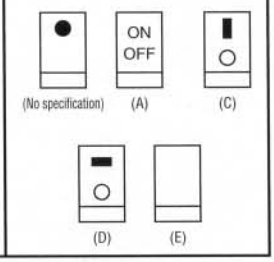
• Pilot Ratings (NH1L)

Pilot	Rated Voltage
Neon type (Red)	125V AC, 50/60Hz (Operating voltage:100 to 125V AC)
LED type (Red)	6, 12, 24, 48V AC/DC (Operating voltage: within ±10% of the rated voltage)

Note: LED type contains a current-limiting resistor.

• Lever Color (NH1S, NH1V): Black

• Rocker Color (NH1Y/NH1L)

Rocker Color (Code)	Black: Standard (no specification) Red (R), Green (G), White (W)
Rocker Indication (Code)	

• Operation of Auxiliary Contacts

Since auxiliary contact operations are interlocked with ON/OFF positions of main terminal, operating status can be monitored using a lamp. Auxiliary contacts also serve as a control of auxiliary circuits.

Operator Position	NO Contact	NC Contact
ON	Closed	Open
Tripped	Open	Closed
OFF	Open	Closed

• Operation of Alarm Contact

Alarm contacts operate only when an overcurrent occurs.

Operator Position	NO Contact	NC Contact
ON	Open	Closed
Tripped	Closed	Open
OFF	Open	Closed

NH1S (Lever Style)

• Specify the rated current and time delay curve in place of A B.

Internal Circuit	No. of Poles	Auxiliary Contacts Alarm Contacts	Inertia Delay	Type No.
Series trip (Current trip)	1	Without	Without	NH1S-1100-A B
			With	NH1S-1100F-A B
		With Auxiliary Contact	Without	NH1S-1111-A B
			With	NH1S-1111F-A B
		With Alarm Contact	Without	NH1S-1121-A B
			With	NH1S-1121F-A B
	2	Without	Without	NH1S-2100-A B
			With	NH1S-2100F-A B
		With Auxiliary Contact	Without	NH1S-2111-A B
			With	NH1S-2111F-A B
		With Alarm Contact	Without	NH1S-2121-A B
			With	NH1S-2121F-A B
	3	Without	Without	NH1S-3100-A B
			With	NH1S-3100F-A B
		With Auxiliary Contact	Without	NH1S-3111-A B
			With	NH1S-3111F-A B
		With Alarm Contact	Without	NH1S-3121-A B
			With	NH1S-3121F-A B

Specification

A Rated Current (A)

0.5, 0.75,1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30

B Time Delay Curves

AC Type	Code	DC Type	Code
Curve MA	MA	Curve MD	MD
Curve AA	AA	Curve AD	AD

• For other specifications, see the next page. (Refer to the Type No. Development.)

NH1Y (Rocker Style)

• Specify the rated current and time delay curve in place of A B.

Internal Circuit	No. of Poles	Auxiliary Contacts	Inertia Delay	Type No.	Rocker Style
Series trip (Current trip)	1	Without	Without	NH1Y-1100-A B	 • Rocker Color: Black
			With	NH1Y-1100F-A B	
		With	Without	NH1Y-1111-A B	
			With	NH1Y-1111F-A B	
	2	Without	Without	NH1Y-2100-A B	
			With	NH1Y-2100F-A B	
		With	Without	NH1Y-2111-A B	
			With	NH1Y-2111F-A B	

Specification

A Rated Current (A)

0.5, 0.75,1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30

B Time Delay Curves

AC Type	Code	DC Type	Code
Curve MA	MA	Curve MD	MD
Curve AA	AA	Curve AD	AD

• For other specifications, see the next page. (Refer to the Type No. Development.)

NH1V (Lever Style)

• Specify the rated current and time delay curve in place of A B.

Internal Circuit	No. of Poles	Auxiliary Contacts Alarm Contacts	Inertia Delay	Type No.
Series trip (Current trip)	1	Without	Without	NH1V-1100-A B
			With	NH1V-1100F-A B
		With Auxiliary Contact	Without	NH1V-1111-A B
			With	NH1V-1111F-A B
		With Alarm Contact	Without	NH1V-1121-A B
			With	NH1V-1121F-A B
	2	Without	Without	NH1V-2100-A B
			With	NH1V-2100F-A B
		With Auxiliary Contact	Without	NH1V-2111-A B
			With	NH1V-2111F-A B
		With Alarm Contact	Without	NH1V-2121-A B
			With	NH1V-2121F-A B
	3	Without	Without	NH1V-3100-A B
			With	NH1V-3100F-A B
		With Auxiliary Contact	Without	NH1V-3111-A B
			With	NH1V-3111F-A B
		With Alarm Contact	Without	NH1V-3121-A B
			With	NH1V-3121F-A B

Specification

A Rated Current (A)

0.5, 0.75,1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30

B Time Delay Curves

AC Type	Code	DC Type	Code
Curve MA	MA	Curve MD	MD
Curve AA	AA	Curve AD	AD

• For other specifications, see the Type No. Development below.

TYPE NO. DEVELOPMENT

❶ Type

Lever Style: NH1S
Rokcer Style w/o indicator: NH1Y
Rokcer Style w/indicator: NH1L
Lever Style (Direct and DIN-rail mounting): NH1V

❺ Inertia Delay

Without	(Code) Blank
With (Note)	F

Note: For the models available with inertia delay, see the ❼ Time Delay Curves and specify the Type No.

❽ External trip coil voltage

Only in NH1S type

Rated Voltage	(Code)
6V	6
12V	12
24V	24
32V	32
50V	50
100V	100

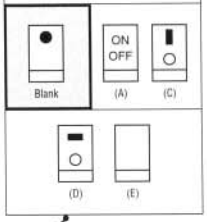
❾ Pilot Light

Only in NH1L type with pilot light.

Light Source	Rated Voltage	(Code)
Neon	125V AC 50/60Hz	1
LED	6V DC	3
	12V DC	4
	24V DC	5
	48V DC	7

❿ Rocker

Only in NH1Y or NH1L rocker style.



⓫ Rocker Color

Specify only for NH1Y or NH1L rocker style.

Black (Standard)	(Code) Blank
(Red)	R
(Green)	G
(White)	W

❶ ❷ ❸ ❹ ❺ — ❻ ❼ ❽ ❾ ❿ ⓫

NH1S - 1 1 11 F — 3 AA

(Only in Rocker Style)

❷ No. of Poles

	(Code)
1-pole	1
2-pole	2
3-pole	3

Note 1: 3-pole type is available with NH1S and NH1V types only.
Note 2: Dual coil type is available with 1-pole and 2-pole types only.

❸ Internal Circuits

	(Code)
Series Trip (Current Trip)	1
Dual coil [Series trip plus relay trip (voltage trip)]	6

❹ Auxiliary Contacts Alarm Contacts

	(Code)
Without	00
w/auxiliary contacts	11
w/auxiliary contacts approved by VDE	12
w/alarm contacts	21
Dual coil type	Blank

❻ Rated Current/Voltage

• Rated Current (Current Trip Type)
(Dual coil type: * only)

Rated Current	Code	Rated Current	Code
–	–	* 3A	3
–	–	* 5A	5
–	–	* 7.5A	7.5
0.5A	0.5	* 10A	10
0.75A	0.75	* 15A	15
* 1A	1	20A	20
* 2A	2	25A	25
–	–	30A	30

• Rated Voltage (Voltage Trip Type)

6V DC	6V	48V DC	48V
12V DC	12V	100V AC	100V
24V DC	24V	200V AC	200V

❼ Time Delay Curves

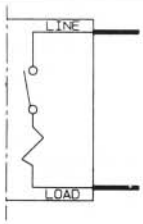
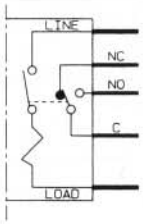
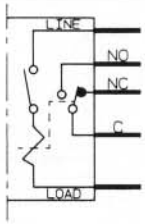
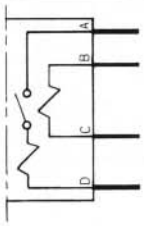
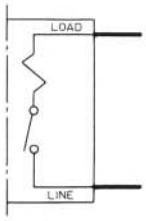
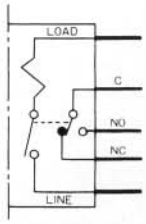
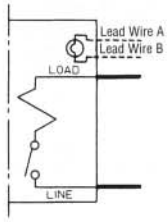
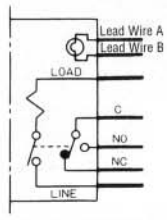
Only in Current Trip Type

Curve		Inertia Delay
AC Type	DC Type	
* MA	* MD	○
* AA	* AD	○
* BA	* BD	○
CA	CD	–
EA	ED	–
SA	SD	–

*: Dual coil type

ORDERING INFORMATION
1. Specify the Type No.
2. For details of available options, contact IDEC.
3. Accessories are also available. (See page 14.)

INTERNAL CIRCUITS AND TERMINAL ARRANGEMENTS

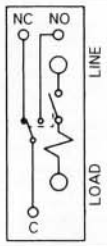
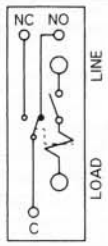
Type	Series Trip (Current Trip)	Series Trip (w/auxiliary contacts)	Series Trip (w/alarm contacts)	Dual Coil Type Series Trip plus Relay Trip (Voltage Trip)
NH1S				
NH1Y				
NH1L w/Indicator				
Appearance (Rear View)				

(Photo: NH1S)

• Lead wires are color-coded as follows:

	Color	LED type	Neon type
Lead Wire A	Red	(+)	(~)
Lead Wire B	Black	(−)	(~)

• NH1V Type

	Series Trip (Current Trip)	Series Trip (w/auxiliary contacts)	Series Trip (w/alarm contacts)
NHIV			
Appearance			

OVERCURRENT - TIME DELAY CHARACTERISTICS (at 25℃)

For	Curve	Percent of Rated Current							
		100%	125%	150%	200%	400%	600%	800%	1000%
AC 50/60Hz	AA	No Trip	12-180	6-70	2-25	0.15-3.5	0.005-0.3	0.004-0.13	0.004-0.04
	BA	No Trip	0.7-15	0.3-4	0.1-1.3	0.02-0.25	0.006-0.13	0.003-0.07	0.003-0.04
	CA	No Trip	0.12-2.3	0.06-0.8	0.026-0.26	0.007-0.06	0.004-0.035	0.004-0.024	0.004-0.02
	SA	No Trip	MAY TRIP	0.005-0.04	0.003-0.035	0.002-0.03	0.002-0.025	0.002-0.02	0.002-0.018
	MA	No Trip	50-800	20-300	5.5-110	0.3-17	0.008-2.5	0.004-0.5	0.004-0.1
	EA	No Trip	0.017-0.15	0.01-0.1	0.009-0.05	0.006-0.022	0.005-0.017	0.004-0.017	0.004-0.017
DC	AD	No Trip	10-180	6-75	2.6-30	0.5-7	0.015-3	0.004-0.8	0.003-0.1
	BD	No Trip	0.5-16	0.3-5	0.13-1.5	0.03-0.2	0.005-0.1	0.003-0.05	0.003-0.025
	CD	No Trip	0.12-2.3	0.07-0.8	0.04-0.3	0.008-0.09	0.005-0.045	0.004-0.03	0.003-0.024
	SD	No Trip	MAY TRIP	0.005-0.032	0.003-0.24	0.002-0.02	0.002-0.018	0.002-0.016	0.002-0.015
	MD	No Trip	70-800	25-300	10-100	1.2-20	0.02-5	0.004-0.65	0.003-0.1
	ED	No Trip	0.013-0.15	0.01-0.1	0.008-0.05	0.006-0.02	0.005-0.02	0.004-0.02	0.004-0.02

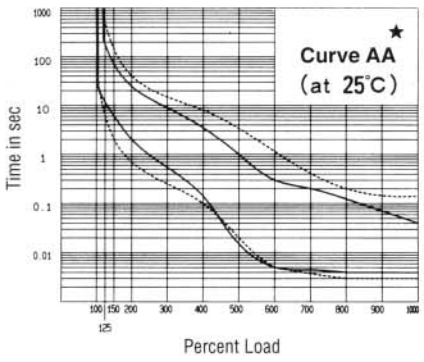
• Dual Coil Type

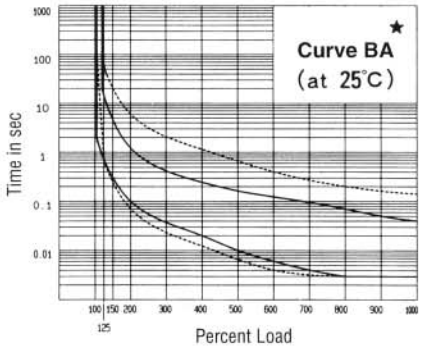
For	Curve	Percent of Rated Current							
		100%	125%	150%	200%	400%	600%	800%	1000%
AC 50/60Hz	AA	No Trip	6-500	2-150	0.7-40	0.1-8	0.005-1.2	0.003-0.2	0.003-0.15
	BA	No Trip	0.7-60	0.25-20	0.07-6	0.013-1.2	0.004-0.4	0.003-0.2	0.003-0.15
	MA	No Trip	50-800	15-600	6-250	0.4-40	0.06-3	0.003-0.2	0.003-0.15
DC	AD	No Trip	10-180	1.5-100	0.6-30	0.1-7	0.015-3	0.004-0.8	0.003-0.1
	BD	No Trip	0.5-30	0.2-15	0.08-2	0.015-0.7	0.005-0.4	0.003-0.2	0.003-0.1
	MD	No Trip	70-800	14-600	5-200	0.8-40	0.007-20	0.003-4	0.003-0.1

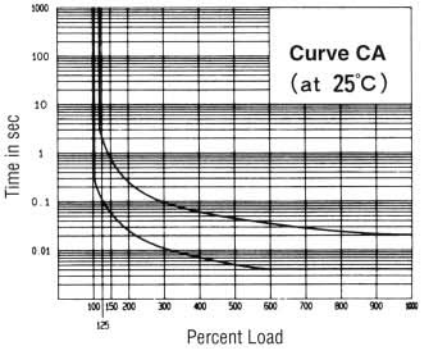
TIME DELAY CURVES

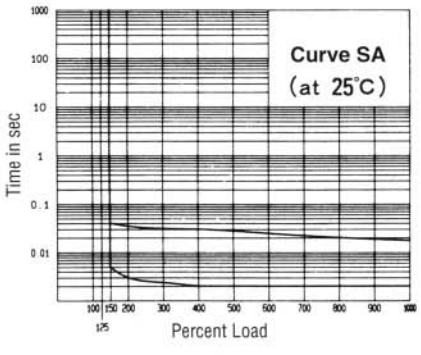
Note 1: The dashed lines show dual coil type.
Note 2: Curves marked with ★ are available with inertia delay.

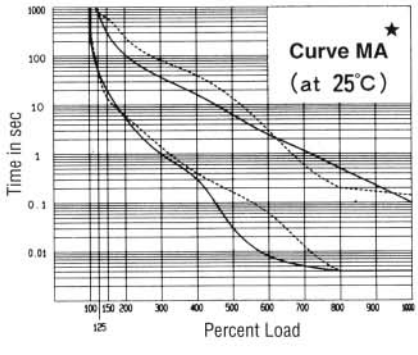
[For AC]

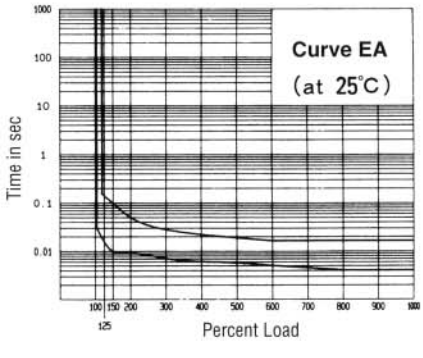




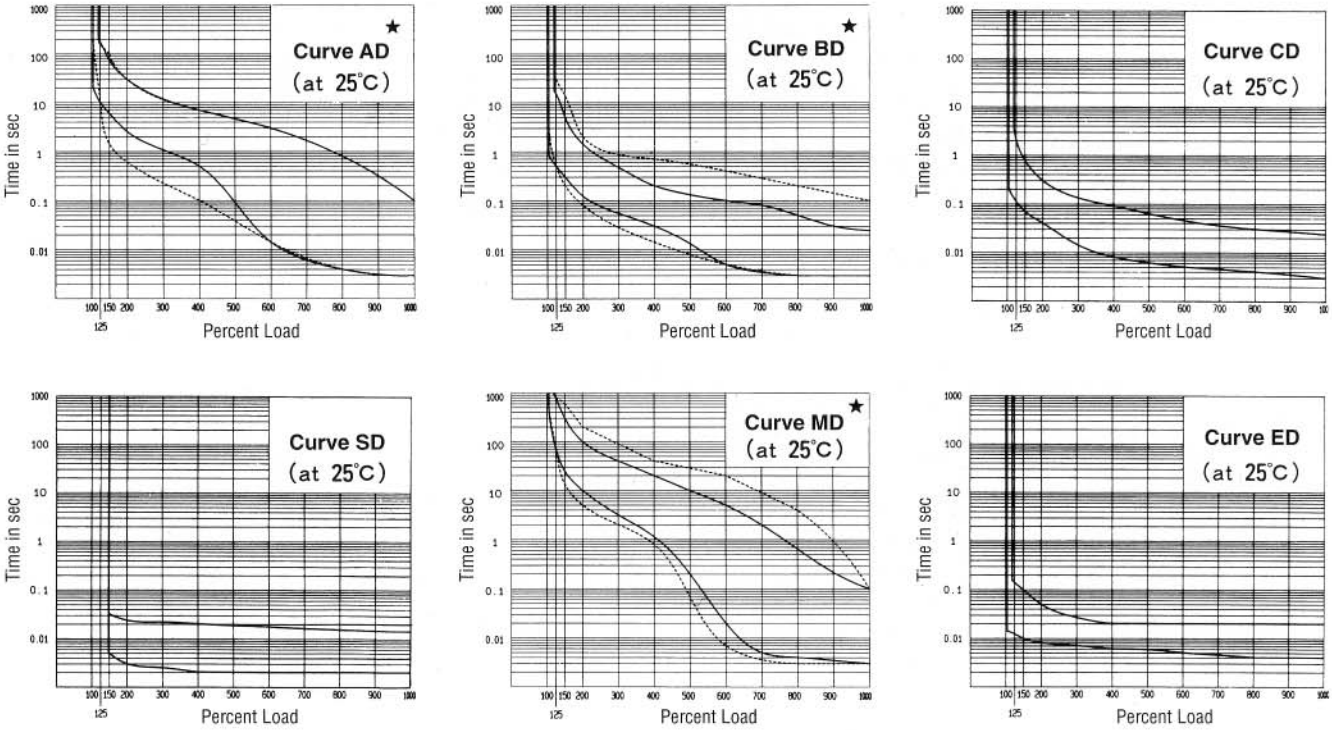








[For DC]



TIME DELAY CURVE AND AMBIENT TEMPERATURE

Since NH1 series circuit protectors employ an electromagnetic tripping system, the rated current (trip current) is not affected by the ambient temperatures but the time delay varies with the oil viscosity in the tube. Lower oil viscosity at higher temepratures results in shorter delay, whereas at lower temperatures the delay will be prolonged. The time delay curves shown on pages 8 and 9 are at 25°C. With reference to the above curves, time delays can be corrected.

INERTIA DELAY

1. Curves marked with ★ (AA, BA, MA, AD, BD, MD) are also available with inertia delay.
2. Circuit protectors equipped with inertia delay do not respond to high inrush currents cansed by transformer or lamp loads, but performs the specified interruption on the rated overcurrents.

COIL RESISTANCE & IMPEDANCE

[Voltage Trip Type] (at 25°C)

Rated Current	For AC 50/60Hz Impedance (Ω)		For DC Resistance (Ω)	
	Curves AA, BA, CA, MA, EA	Curve SA	Curves AD, BD, CD, MD, ED	Curve SD
0.5A	3.36	1.35	3.24	0.90
0.75A	1.49	0.57	1.45	0.39
1A	0.92	0.302	0.90	0.21
2A	0.21	0.075	0.21	0.054
2.5A	0.13	0.047	0.13	0.033
3A	0.092	0.034	0.09	0.028
5A	0.036	0.013	0.036	0.013
7.5A	0.018	0.0073	0.017	0.0067
10A	0.012	0.0053	0.012	0.0052
15A	0.0068	0.0039	0.0066	0.0038
20A	0.0048	0.0033	0.0048	0.0033
25A	0.0043	0.0032	0.0043	0.0032
30A	0.0041	0.0030	0.0036	0.0030

Note: Tolerance 20A maximum: ±25%, 25A minimum: ±50%

[Voltage Trip] (at 25°C)

Rated Current	For AC 50/60Hz Impedance (Ω)	For DC Resistance (Ω)
6V DC	—	56
12V DC	—	125
24V DC	—	248
48V DC	—	380
100V AC	1350	—
200V AC	2310	—

For dual coil type, see the next page.

COIL RESISTANCE & IMPEDANCE

• Dual Coil Type

[Current Trip Type] **(at 25℃)**

Rated Current	For AC 50/60Hz Impedance (Ω)	For DC Resistance (Ω)
	Curve AA, BA, MA	Curve AD, BD, MD
1A	1.15	1.16
2A	0.038	0.307
3A	0.129	0.127
5A	0.0509	0.0518
7.5A	0.0249	0.0245
10A	0.0150	0.0150
15A	0.0084	0.0080

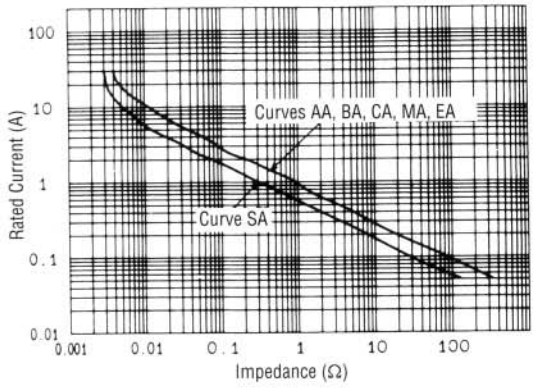
Tolerance: ±25%

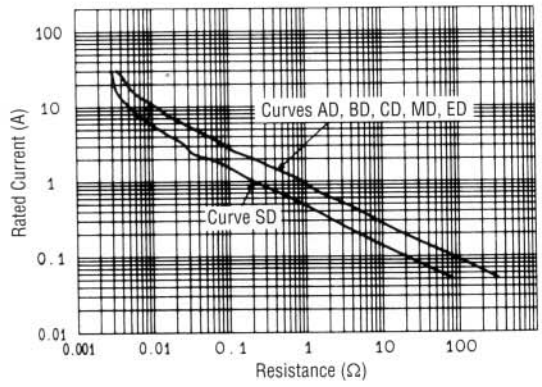
[Voltage Trip Type] **(at 25℃)**

Rated Current	For AC 50/60Hz Impedance (Ω)	For DC Resistance (Ω)
6V	1.72	1.05
12V	6.34	5.60
24V	17.6	15.7
36V	29.9	28.6
50V	81.1	79.7
100V	321	321

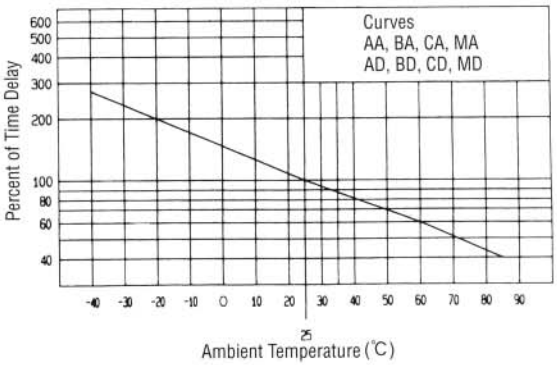
• Voltage Drop due to Coil Resistance

The internal resistance or impedance of a circuit protector tends to be larger for a smaller rated current. Therefore, when circuit protectors of a small rated current are used, voltage drop should be taken into consideration. Internal resistance also varies with time delay curves in spite of the same rated current, which should also be considered during installation.





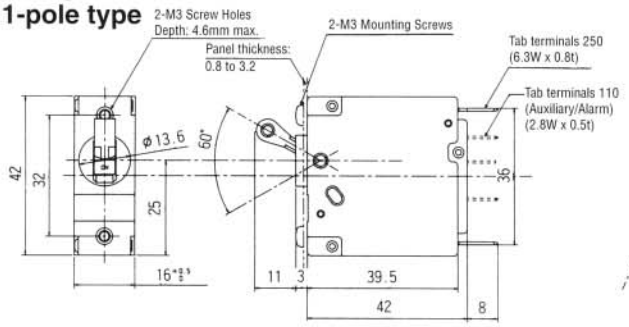
TEMPERATURE CORRECTION CURVES



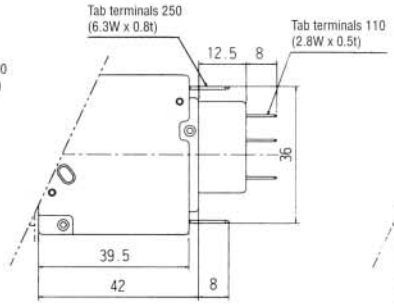
DIMENSIONS (All dimensions in mm.)

[NH1S]

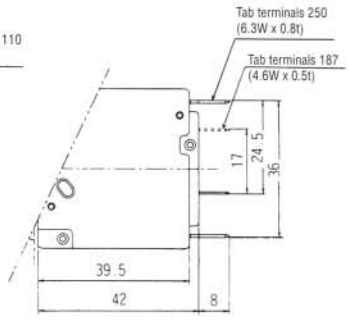
• 1-pole type



Series Trip

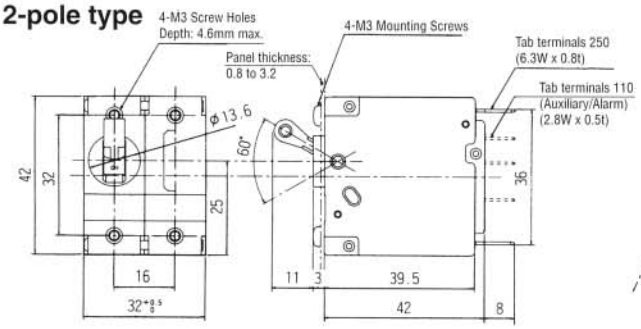


Series Trip
(VDE Auxiliary Contact)



Dual Coil Type (4 terminals)

• 2-pole type



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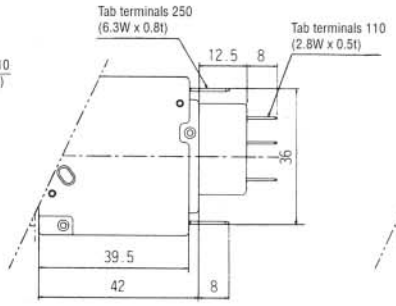
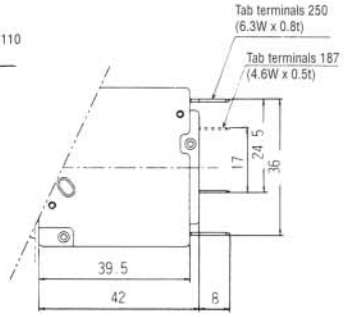
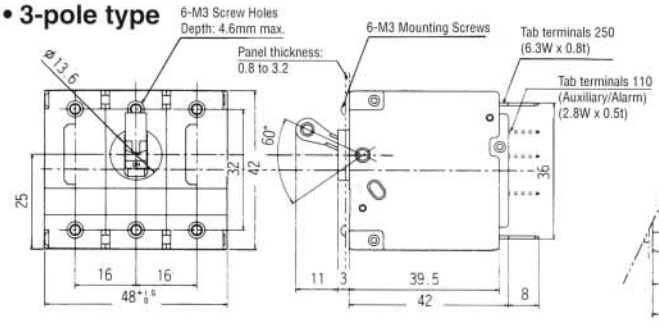


Series Trip
(VDE Auxiliary Contact)

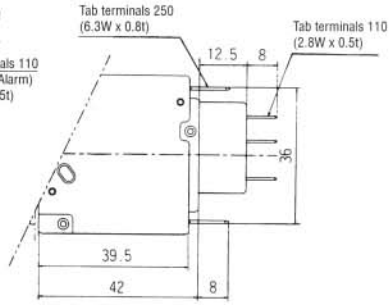


Dual Coil Type (4 terminals)

• 3-pole type

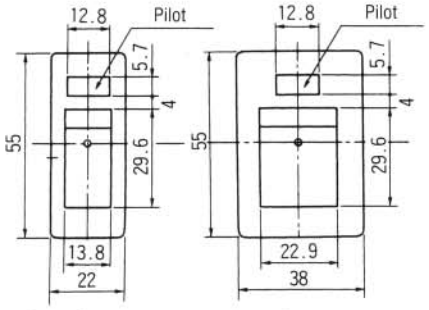


Series Trip

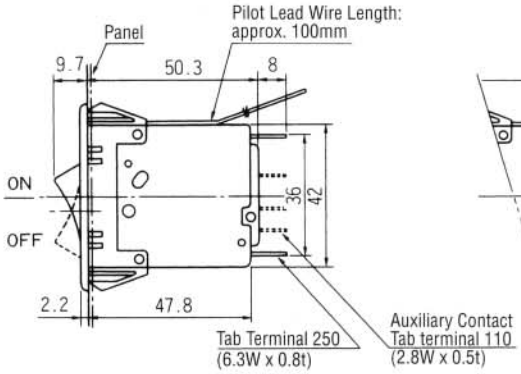


Series Trip
(VDE Auxiliary Contact)

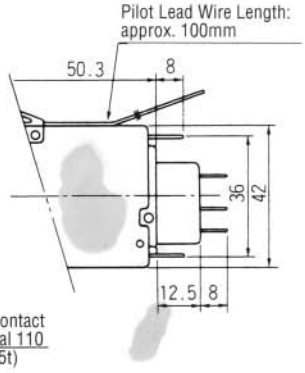
[NH1Y•NH1L]



1-pole type　　2-pole type



Series Trip

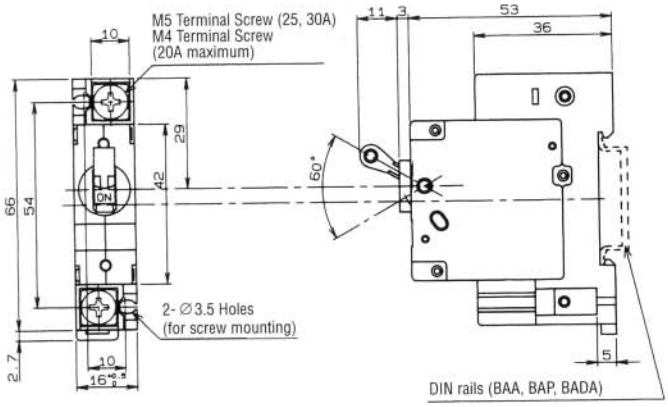


Series Trip
(VDE Auxiliary Contact)

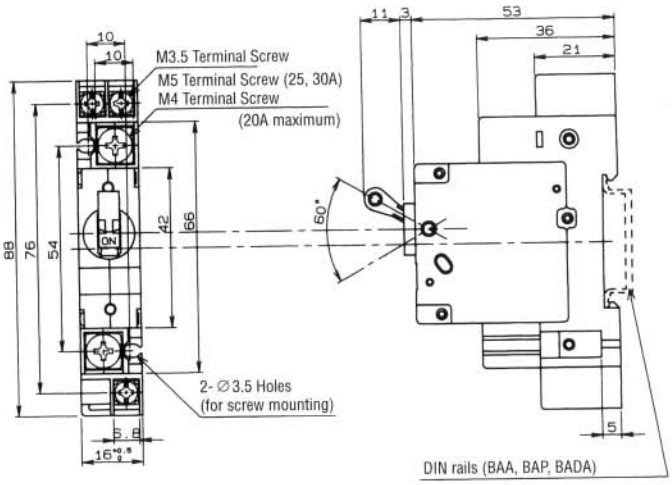
DIMENSIONS (All dimensions in mm.)

[NH1V]

• 1-pole type

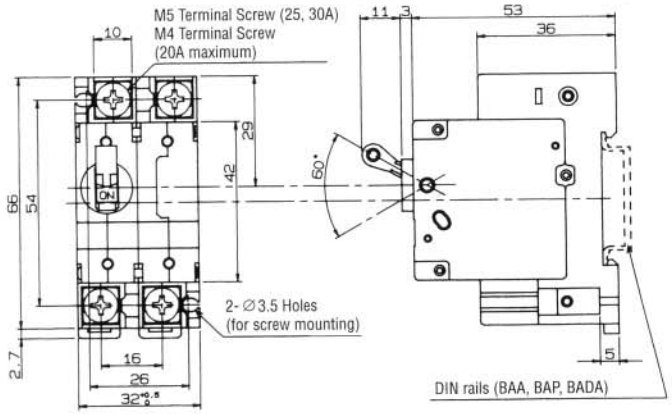


Series Trip

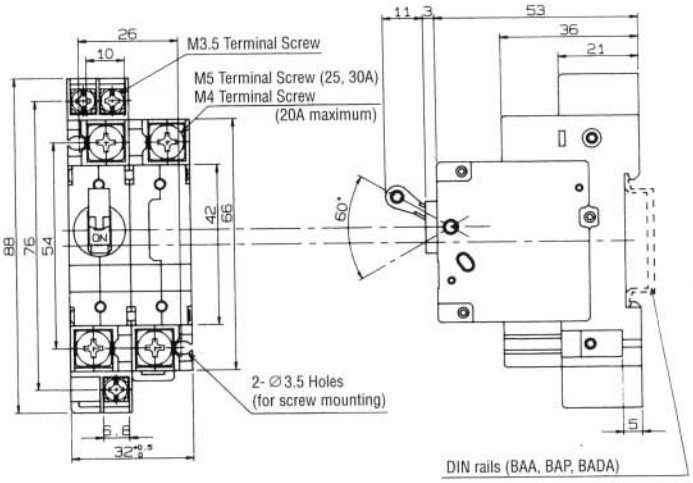


Series Trip (Auxiliary/Alarm Contacts)

• 2-pole type

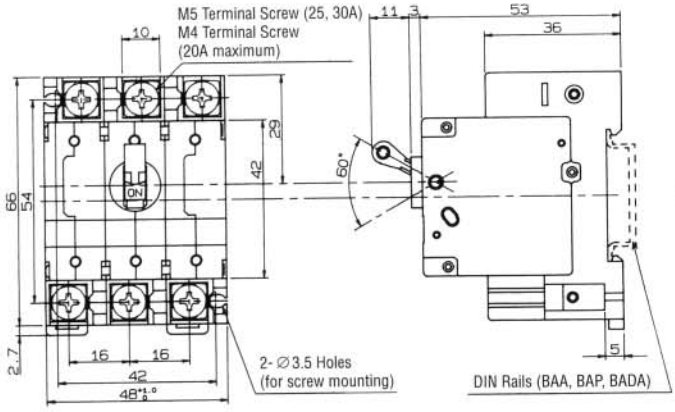


Series Trip

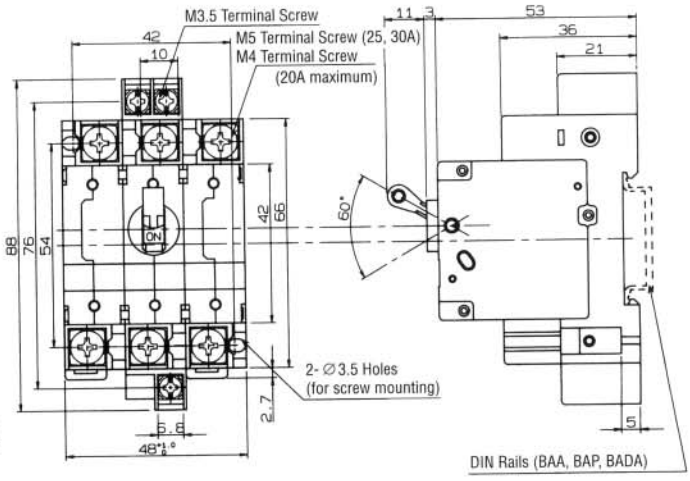


Series Trip (Auxiliary/Alarm Contacts)

• 3-pole type



Series Trip

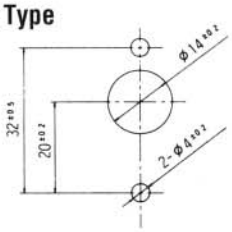


Series Trip (Auxiliary/Alarm Contacts)

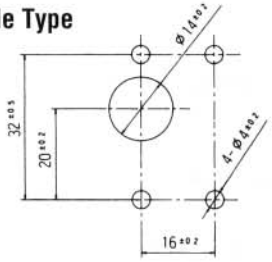
MOUNTING HOLE LAYOUT

[NH1S]

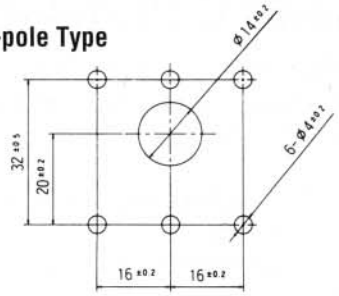
• 1-pole Type



• 2-pole Type

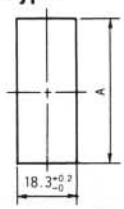


• 3-pole Type

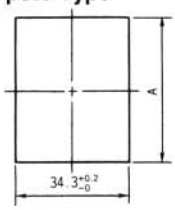


[NH1Y•NH1L]

• 1-pole Type



• 2-pole Type

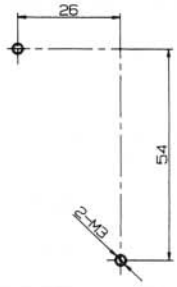


Note: Determine the dimension A within the panel thckness using the following equation.
Dimension A = 50.4 + (Panel thickness - 0.8) x 0.87
• Applicable panel thickness: 0.8 to 3.2mm

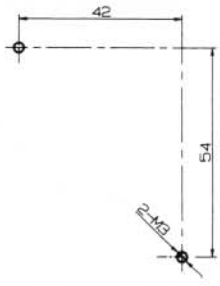
[NH1V]

• 1-pole Type

• 2-pole Type



• 3-pole Type

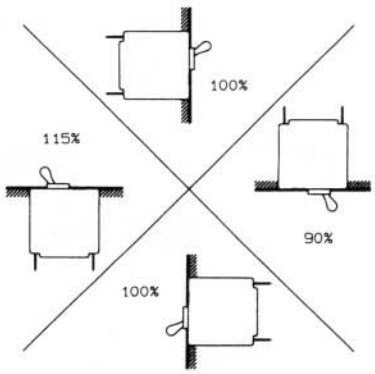


• Panel Mounting Screw Length

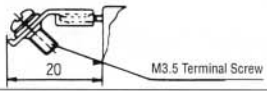
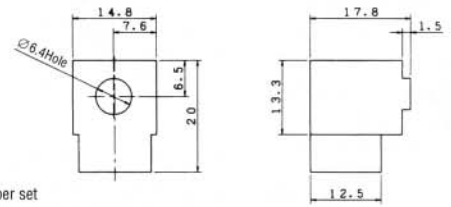
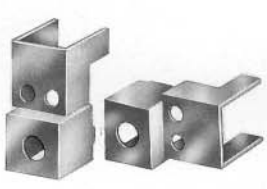
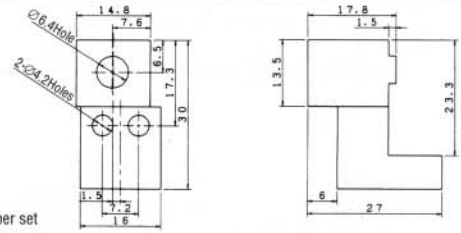
With panel thickness (mm)	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.3	2.6	3.2
Without washer	5	5	5	6	6	6	6	6	7	7
With plain washer (0.5mm thick)	5	6	6	6	6	6	7	7	7	8
With spring washer (0.7mm thick)	6	6	6	6	6	7	7	7	7	8
With plain washer (0.5mm thick) With spring washer (0.7mm thick)	6	6	7	7	7	7	7	8	8	8

• Installation Angle

Tripping method is hydraulic-magnetic. Minimum operating current varies with installation angle because operating currents are influenced by the weight of movable iron core. With reference to the below figure, correct the rated current.



ACCESSORIES (Optional)

Appearance	Type No.	Description
• Screw Terminal Adaptor (15A max.)  Packging unit: 10sets	NRT two pieces per set	Used for main terminals, with an M3.5 terminal screw. (15A max.) 
• Terminal Cover (for main terminals)  	NH9Z-AP	 two pieces per set
• Terminal Cover (for main terminals)  	NH9Z-BP	 two pieces per set

NH1G CIRCUIT PROTECTORS WITH GROUND-FAULT PROTECTION

Ciruit Protectors (Protection against Short Circuit and Overload) with Ground-Fault Protection.

NH1G circuit protector adds highly-sensitive high-speed ground-fault protection to the NH1S series 2-pole type.

- **Ground-fault protection is highly-sensitive and high-speed.**
- **Available with auxiliary contacts and inertia delay.**
- **Rated interrupting capacity: 1,000A (220V AC)**
- **Applications: Medical and Industrial Devices.**

TYPE NO. DEVELOPMENT

❶ Type No.
Lever Style NH1G

❺ Inertia Delay	
Without	(Code) Blank
With	F

❻ Rated Current	
Rated Current	Code
1A	1
2A	2
3A	3
5A	5
7.5A	7.5
10A	10
15A	15

❽ Ground-fault protection sensitive current	
Rated Sensitive Current	(Code)
15mA	15
30mA	30

❶	❷	❸	❹	❺	❻	❼	❽
NH1G	2	1	11	F	3	A	15

❷ No. of Poles	
2-pole	(Code) 2

❸ Internal Circuit	
Series Trip (Current Trip)	(Code) 1

❹ Auxiliary Contacts	
Without	(Code) 00
With	11

❼ Time Delay Curve		
Curve For AC	Inertia Delay	(Code)
AA	○	A
BA	○	B

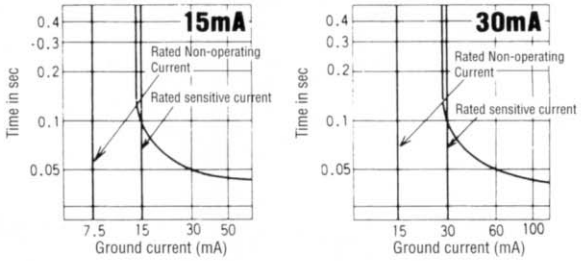
SPECIFICATIONS

Rated Voltage	100/200V AC (50/60Hz)
Operating Voltage	80 to 242V AC
Operating Temperature	-10 to +50°C
Insulation Resistance	100MΩ minimum (500V DC megger)
Dielectric Strength	1,500V AC, 1 minute
Vibration Resistance	100 m/sec² (10 to 100Hz)
Shock Resistance	1,000 m/sec²
Life	10,000 operations minimum (6 operations/minute)
Terminal Style	Main terminal: Tab terminal 250 (Accepts M3.5 screw terminal adaptor) Auxiliary terminal: Tab terminal 110
Weight	Approx. 130g

GROUND-FAULT PROTECTION SPECIFICATIONS

Rated Sensitive Current	15mA, 30mA
Rated Non-operating Current	50% or more of rated sensitive current
Ground-fault Protection Characteristics	Protection begins within 0.1 sec after grounding current exceeds rated sensitive current.

- **Ground-fault protection characteristics**



CIRCUIT PROTECTORS

Method of Tripping	HM (Hydraulic-magnetic)
Internal Circuit	Series Trip (Current Trip) (Available with auxiliary contacts.)
No. of Poles	2
Rated Current	1A, 2A, 3A, 5A, 7.5A, 10A, 15A
Rated Interrupting Capacity	1,000A, 220V AC 50/60Hz
Auxiliary Contacts	SPDT microswitch 250V AC, 3A (resistive load)

• Impedance (at 25°C)

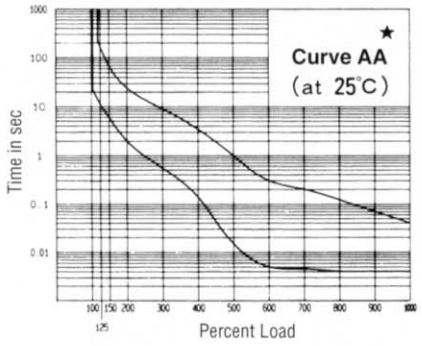
Rated Current	Impedance (50/60Hz)	Rated Current	Impedance (50/60Hz)
1A	0.92Ω	7.5A	0.018Ω
2A	0.21Ω	10A	0.012Ω
3A	0.092Ω	15A	0.0068Ω
5A	0.036Ω	—	—

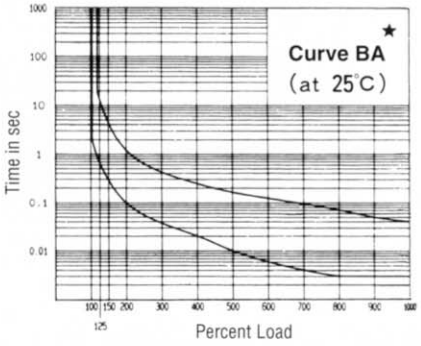
Tolerance: ±25%

The smaller rated current, the greater impedance. When the small rated current is used for operating the switching power supplies, take the voltage drop into consideration.

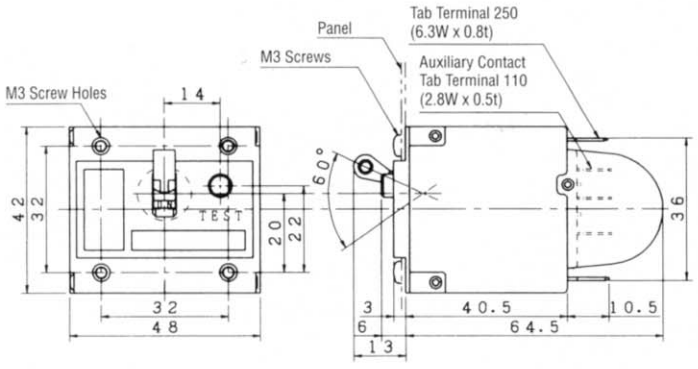
• Overcurrent - Time Delay Characteristics (sec at 25°C)

Type	Curve	Percent of Rated Current							
		100%	125%	150%	200%	400%	600%	800%	1000%
For AC	AA	NO TPIP	12-180	6-70	2-25	0.15-3.5	0.005-0.3	0.004-0.13	0.004-0.04
	BA	NO TPIP	0.7-15	0.3-4	0.1-1.3	0.02-0.25	0.006-0.13	0.03-0.07	0.003-0.04

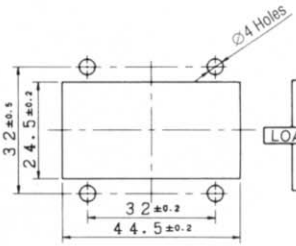




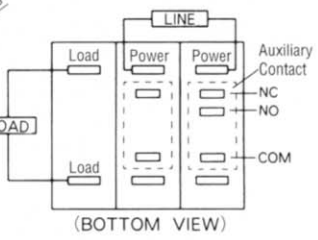
DIMENSIONS



MOUNTING HOLE LAYOUT



TERMINAL CONNECTIONS



Specifications and other descriptions in this catalog are subject to change without notice.

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